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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/940,651	08/29/2001	Chia Chi Feng	2769-106	4794

6449 7590 01/06/2006

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EXAMINER
WOZNIAK, JAMES S

ART UNIT	PAPER NUMBER
2655	

DATE MAILED: 01/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/940,651	FENG, CHIA CHI	
	Examiner	Art Unit	
	James S. Wozniak	2655	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,5,6,8,10,12-14 and 16-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,5,6,8,10,12-14 and 16-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 August 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. In response to the office action from 9/26/2005, the applicant has submitted a request for continued examination, filed 10/17/2005, amending claims 1, 3, 5, 8, 10, 13, and 17-18, while arguing to traverse the art rejection based on the limitation regarding vowel recognition performed using the total number of slope transitions and the total number of times a vowel waveform passes from a lower to upper domain *(Amendment, Pages 10-11)*. The applicant's arguments have been fully considered but are moot with respect to the new grounds of rejection in view of Harper *(U.S. Patent: 3,278,685)*.

Claim Objections

2. Claims 1, 5, 8, 13, 17, and 18 have been objected to because of the following informalities:

In Claims 1, 5, 8, 13, 17, and 18, "the total number of turning points" should be changed to –a total number of turning points-- in order to provide proper antecedent basis.

In Claims 1, 5, 8, 13, 17, and 18, "the total number of positive going zero crossings" should be changed to –a total number of positive going zero crossings-- in order to provide proper antecedent basis.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claims 1, 5, and 17** are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al *("A Mandarin Speech Dictation System Based on Neural Network and Language Processing Model," 1994)*, in view of Harper *(U.S. Patent: 3,278,685)*.

With respect to **Claim 1**, Huang discloses:

Processing a phonetic sound generated by a user and transforming the phonetic sound into a phonetic waveform *(reception of an input speech signal, Fig. 1, and Page 442, Experimental Conditions)*;

Dividing a sound packet of the phonetic waveform into different parts of consonant, wind, and vowel *(segmentation, Page 439, Preprocessing Process; and vowel, consonant, and tone recognizer, Fig. 1)*;

Recognizing the different parts of the sound packet respectively *(vowel recognizer and consonant recognizer, Fig. 1)*;

Combining the recognized parts for determining a character corresponding to the phonetic sound *(homonym characters, Fig. 1)*; and

Completing the phonetic recognition *(output text resulting from recognition, Fig. 1)*.

Huang does not specifically disclose that performing vowel recognition by comparing characteristic parameters including slope, turning number (total number of turning points), and wave number (total number of positive-going zero crossings) against a rule for vowel recognition, however Harper discloses a vowel recognition method *(Col. 8, Lines 40-57)* utilizing a means for counting a total number of waveform slope polarity reversals *(Col. 3, Line 43- Col. 4, Line 9; Col. 7, Lines 12-24; Fig. 2, Element 104)* and a total number of positive zero crossings, wherein each positive-going going zero crossing is represented by a corresponding output pulse *(Fig. 1, Col. 4, Lines 10-36)*.

Huang and Harper are analogous art because they are from a similar field of endeavor in speech processing utilizing vowel identification. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Huang with the vowel recognition method taught by Harper in order to provide a means for obtaining waveform features capable of defining speech information in a recognition application *(Harper, Col. 1, Lines 42-51)*.

With respect to **Claim 5**, Huang discloses:

Processing a phonetic sound generated by a user and transforming the phonetic sound into a phonetic waveform *(reception of an input speech signal, Fig. 1, and Page 442, Experimental Conditions)*;

Analyzing physical properties of the phonetic waveform for acquiring characteristic parameters of the waveform *(cepstral vectors, Page 439, Preprocessing Process)*;

Dividing a sound packet of the phonetic waveform into parts of consonant, wind and vowel, according to the characteristic parameters *(vowel, consonant, and tone recognizer, Fig. 1, and segmentation, Page 439, Preprocessing Process)*;

Analyzing the parts of consonant and vowel for waveform characteristics thereof, so as to recognize a character consonant corresponding to the part of consonant and a character vowel corresponding to the part of vowel *(finding homonym characters, Fig. 1)*;

Combining the recognized character consonant and character vowel for obtaining a corresponding character *(homonym characters, Fig. 1)*, and

Completing the phonetic recognition *(output text resulting from recognition, Fig. 1)*.

Huang does not specifically disclose that performing vowel recognition by comparing characteristic parameters including slope, turning number (total number of turning points), and wave number (total number of positive-going zero crossings) against a rule for vowel recognition, however Harper discloses a vowel recognition method *(Col. 8, Lines 40-57)* utilizing a means for counting a total number of waveform slope polarity reversals *(Col. 3, Line 43- Col. 4, Line 9; Col. 7, Lines 12-24; Fig. 2, Element 104)* and a total number of positive zero crossings, wherein each positive-going going zero crossing is represented by a corresponding output pulse *(Fig. 1, Col. 4, Lines 10-36)*.

Huang and Harper are analogous art because they are from a similar field of endeavor in speech processing utilizing vowel identification. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Huang with the vowel recognition method taught by Harper in order to provide a means for obtaining waveform

features capable of defining speech information in a recognition application *(Harper, Col. 1, Lines 42-51)*.

With respect to **Claim 17**, Huang in view of Harper teaches the phonetic recognition method as applied to Claim 5. Also Huang further discloses multiple recognition databases *(Page 442)*.

5. **Claims 3 and 6** are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al *("A Mandarin Speech Dictation System Based on Neural Network and Language Processing Model," 1994)*, in view of Harper *(U.S. Patent: 3,278,685)*, and further in view of Marley *(U.S. Patent: 4,181,813)*.

With respect to **Claims 3 and 6**, Huang in view of Harper teaches the system and method for vowel, consonant, and wind speech classification utilizing slope turning points and positive zero crossings, as applied to Claims 1 and 5. Huang in view of Harper does not specifically suggest that a consonant has a waveform of gradation, affricate, extrusion, or plosive; and the part of wind is much higher in frequency than the parts of consonant and vowel, however Marley discloses such waveform characteristics *(fricative consonants and high frequency hiss, Col. 14, Line 57- Col. 15, Line 23)*.

Huang, Harper, and Marley are analogous art because they are from a similar field of endeavor in speech processing utilizing vowel identification. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Huang in view of Harper with the rules for vowel and consonant characterization as taught by Marley in order to provide distinguishing characteristics for efficiently recognizing vowels in addition to

consonants and sharp transient sounds using recognition algorithms *(Marley, Col. 2, Lines 44-50; and Col. 10, Lines 3-7)*.

6. **Claims 8, 10, 12-14, 16, and 18-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang in view of Harper, and further view of Chen et al *(U.S. Patent: 5,751,905)*.

With respect to **Claim 8**, Huang in view of Harper teaches the system and method for vowel, consonant, and wind speech classification utilizing zero crossing rate, transitions, and slope, as applied to Claim 1. Huang in view of Harper does not specifically suggest determining a tone by utilizing fore and rear frequencies, however, Chen discloses:

Determining a fore frequency and a rear frequency of the sound packet *(determining rising and falling tones by utilizing pitch extraction, Col. 6, Lines 38-50)*.

Recognizing a tone for the phonetic sound according to a rule for determining the fore and rear frequencies *(rising and falling tones, Col. 6, Lines 38-50)*.

Huang, Harper, and Chen are analogous art because they are from a similar field of endeavor in speech processing utilizing vowel identification. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Huang in view of Harper with the use of rising and falling tones in phonetic recognition as taught by Chen in order to provide a further means of recognizing corresponding characters in phonetic recognition by detecting tone changes between a rising and falling tone along with the pitch contour taught by Huang *(Page 439, Preprocessing Process)*.

Claims 10 and 14 contain subject matter similar to Claims 3 and 6, and thus, are rejected for the same reasons.

With respect to **Claim 12**, Chen further recites:

The fore frequency is determined by taking an average frequency for a first quarter region of the sound packet, and the rear frequency is determined by taking an average frequency for a final quarter region of the sound packet *(average pitch of rising and falling tones, Col. 7, Lines 18-58)*.

Although Huang in view of Harper, and further view of Chen does not specifically teach that the fore and rear frequencies are determined by taking the average frequency for corresponding quarter regions of a sound packet, it would have been obvious matter of design choice to do so, since the applicant has not disclosed that acquiring average frequency data for specific quarter regions solves any stated problem or is for any particular purpose. The benefit for using such a quarter region for average frequency data acquisition would be to provide a sufficient averaging period to obtain tone data of an audio signal. Thus, in order to provide a sufficient averaging period, it would have been obvious to one of ordinary skill in the art, at the time of invention, to utilize a corresponding quarter region for the acquisition of average frequency data in determining tone information of an audio signal.

Claim 13 contains subject matter similar to Claims 5 and 8, and thus, is rejected for the same reasons.

Claim 16 contains subject matter similar to Claim 12, and thus, is rejected for the same reasons.

Claim 18 contains subject matter similar to Claims 13 and 17, and thus, is rejected for the same reasons.

With respect to **Claim 19**, Huang further teaches the use of a vowel, consonant, and tone recognizer as shown in Fig. 1.

With respect to **Claim 20**, Huang in view of Harper, and further in view of Chen teaches the phonetic recognition processing steps as applied to Claim 13 and phonetic recognition databases as applied to Claim 17.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Herscher et al *(U.S. Patent: 3,588,363)*- teaches a means for vowel class feature recognition utilizing slope information.

Lee *(U.S. Patent: 6,067,520)*- teaches a system for recognizing vowels and consonants in speech that utilizes a negative-to-positive zero crossing rate and instantaneous energy.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James S. Wozniak whose telephone number is (571) 272-7632. The examiner can normally be reached on M-Th, 7:30-5:00, F, 7:30-4, Off Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on (571) 272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James S. Wozniak
11/23/2005

SUSAN MCFADDEN
PRIMARY EXAMINER